NC UAS Program Overview
EDEN Conference
October 2014

Kyle Snyder,
NGAT Program Director
NGAT Program: Introduction

- Organizational Structure
  - NGAT

- Staff
  - NGAT Program Director- Kyle Snyder
  - NGAT Flight Operations Manager- Tom Zajkowski
  - NGAT Programs Manager- coming soon
  - NGAT Program Support Specialist- coming soon
  - NGAT Airspace Consultant- Randy Breedlove

- History: NextGen Air Transportation Program
  - Relaunched in May 2012 with UAS Program focus
  - 2012: Build foundation
  - 2013: Begin UAS flight operations
  - 2014: Governance, Research, Integration
  - 2015: Registration, Research, Partnerships

ITRE → ORIED → NCSU
Mechanical and Aerospace Engineering Dept.
NCDOT-Division of Aviation
State CIO
“NextGen”

- Satellite Based Navigation and Surveillance
- Digital Data Exchange
- Automation Assisted Air Traffic Management
- Probabilistic Weather Decision Tools
- Equivalent Visual Operations
- Prognostic Safety Systems
- Reduced Aircraft Environmental Footprint

Unmanned Aircraft Systems

- Pilot
- Observer
- Aircraft
- Payload/sensor/camera(s)
- Ground station/equipment
- Communications
- Not model aircraft
- Part of “NextGen”
UAV?
Vireo™ UAS System

All components shown pack into Rugged Transport Case for transport, storage or shipping.

- GCS
- AV 1
- AV 2
- Additional micro gimbal payloads
- GCS carry case
- Spare air vehicle batteries
- FSK
- Vireo™ air vehicle with battery & payload installed, Carry case
- Ground Comms subsystem with antenna, tripod
- Power/Data Hub
- GCS Tablet
- Battery Charger

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UAS Component Breakdown

1- Camera/Gimbal
2- Propulsion
3- Ground Control Station
4- Flight Control System
5- Communication System
6- Airframe
Building a UAS Ecosystem in NC

**User Capability Requirements**

**Initial Design and Development**

**Testing**

**Training**

**Policies**

**Fielding**

**Sustainment / Maintenance**

**Production Design**

**Manufacturing**
UAS Facts vs Myths

• UAVs are just R/C airplanes with expensive price tags
• September 2015 UAS operations will be commercially legal
• There are no laws governing UAS operations
• There is little concern for citizens’ privacy rights by UAS operators/advocates
• A private farmer can buy his own UAV, equip it with a camera, fly over his farm, and use that imagery to improve his production and knowledge.
Current NC UAS Policy Activities

- FAA is THE authority today
- UAS operated by state agencies are “public aircraft”
  - Must have a COA (Certificate of Authorization) from FAA
  - Must meet NC requirements in addition to federal laws
- Current UAS operations by state/local agencies require approval from State CIO

2014 NC UAS Legislation Highlights

- No UAS may be launched from any State or private property without consent. Local governments may adopt similar rules.
- Allows civil penalty of up to $5000.00 for unwarranted surveillance by UAS.
- Requires NCDOT Division of Aviation to develop a knowledge and skills test for operating UAS not later than May 31, 2015. Test must comply with state and federal regulations. *Working group has formed to address.*
- Division of Aviation is required to immediately begin developing a Commercial licensing system that complies with FAA guidelines (not yet developed). Within 60 days of issuance of authorization by FAA be able to implement commercial license requirements.
NC UAS COA Flight Locations

1- Butner
2- Caratoke (Moyock)
3- Gull Rock Test Site (Hyde County)
4- Green Swamp
5- Vernon James
6- Lake Wheeler
Current NGAT UAS Fleet with COA Locations

**Micro (< 5 lbs)**
- Vireo
- UX5
- Precision Hawk
- Maveric
- Super Swiper
- Avenger
- Super Bat
- FENRIR

**Small (10 - 55 lbs)**
- Lake Wheeler
- Lake Wheeler
- Butner
- GRTS
- GRTS

**Large (55+ lbs)**
- Lake Wheeler
- Butner
- Caratoke
- T-20
- GRTS
NGAT Center: UAS Research

- Operational Safety
- Policy (collaboration with SCIO and NCDOT)
- Training
- Applications
  - Agriculture- aerial imaging (crop health), aerial application
  - Small area surveys- mapping, 3D modeling, remote sensing
  - Wildlife/herd management
  - Public Safety- infrastructure inspections, emergency response
  - Cargo delivery
- Scientific
UAS Statewide Integration

- Dept. of Transportation
- Dept. of Environment and Natural Resources
- Dept. of Agriculture
- Dept. of Public Safety
- State Bureau of Investigations, Highway Patrol
- NC National Guard
- Local
  - Law Enforcement
  - Emergency Response
  - Utilities
- Universities
- Commercial Industries
Emergency Response
Fire Management
Infrastructure Management
## Path to a UAS Program

<table>
<thead>
<tr>
<th>Obtain Support</th>
<th>Initial Research</th>
<th>Develop Integration Plan</th>
<th>Obtain Funding and Purchase</th>
<th>Obtain FAA Certificate of Authorization (CoA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Anticipated Missions</td>
<td>Familiarization and Training</td>
<td>Aircraft</td>
<td>Issued to state/public agencies only</td>
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<tr>
<td>Key Community Partners</td>
<td>Potential locations</td>
<td>Training</td>
<td>Ground support equipment</td>
<td>Specific to aircraft type and location</td>
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<tr>
<td>Expertise / Knowledge Source</td>
<td>Airspace</td>
<td>Community education</td>
<td>Maintenance supplies</td>
<td>Follow prescribed SOPs and C2 requirements</td>
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<td></td>
<td>Staffing impact</td>
<td>Identify initial missions</td>
<td>Training</td>
<td>Require FAA approved training</td>
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<td></td>
<td>Risk Management</td>
<td>Timelines</td>
<td>Staffing</td>
<td>Line of Sight monitoring</td>
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<td>Product options</td>
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<td>Not to be used for commercial benefit</td>
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- **Start Flight Ops**
  - On-location familiarization
  - Scenario-based training
  - Mission authorizations (warrants, DoD deconfliction, land owner approval)
  - FAA reporting
# NGAT COA Process

<table>
<thead>
<tr>
<th>Airworthiness Analysis</th>
<th>Site Location Analysis</th>
<th>Package Development</th>
<th>FAA Review</th>
<th>CIO / NCDOT Review Board</th>
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<tr>
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<td>Documentation</td>
<td>Comments</td>
<td>UAS Operations / Permit Approval</td>
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<td>Aircraft Inspection</td>
<td>manuals, agreements, etc</td>
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<td>Q&amp;A</td>
<td>SOPs- pilot</td>
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<td>Site visit</td>
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<td>Identification of key points</td>
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<td>CIO / Governance Board</td>
<td>Coordination</td>
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<td>Data Management Plan Development</td>
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<td>UAS Operations Request</td>
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Statewide Integration

- Foundation architecture
  - Equipment
  - Policies
  - Data Management

- Availability
  - State agencies
  - Local agencies

- Flexible / Adaptive
What To Watch For...

- New NGAT Website
- NGAT Membership Program Launch
- Regional Workshops and Informational Sessions
- 2014 Fall Reception- TBD
- 2014 NC State Fair, Raleigh- October
- 2014 UAS Demo Day at GRTS- 10/30
- FAA UAS Integration Center of Excellence Announcement December 2014
For More Information

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It is not really necessary to look too far into the future; we see enough already to be certain it will be magnificent. Only let us hurry and open the roads.

- Wilbur Wright

“If you decide to try your machine here & come, I will take pleasure in doing all I can for your convenience & success & pleasure, & I assure you- you will find a hospitable people when you come among us.”

- William J. Tate, Kitty Hawk Postmaster 1900
Questions?